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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,945	02/19/2002	Jeffrey T. Cheung	01SC134US1	6713

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EXAMINER
PEREZ, GUILLERMO

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 05/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/077,945	CHEUNG ET AL.	
	Examiner	Art Unit	
	Guillermo Perez	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *0202* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: pages 7 and 8 fail to disclose the numbers of the copending applications.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 24-29 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Konotchick (U. S. Pat. 5,347,186).

Referring to claim 24, Konotchick discloses a dynamic magnet system (figure 4), comprising:

a support structure (3) and an even number of magnets (41,42) oriented in polar opposition to individually move relative to the support structure (3) along a common axis.

Referring to claim 25, Konotchick discloses a pair of end magnets (40,43) along the axis limiting the travel of the moving magnets (41,42), the end magnets (40,43) are oriented in polar opposition to the nearest respective moving magnets (41,42).

Referring to claim 26, Konotchick discloses a conductor (45-46,48-49) oriented with respect to the support structure (3) and magnets (41,42) so that movement of the magnets (41,42) induces an electrical signal in the conductor (45-46,48-49).

Referring to claim 27, Konotchick discloses that the conductor (45-46,48-49) comprising at least one coil wound on the support structure (3), the support structure (3) being nonconductive (column 3, line 66 through column 4, line 1).

Referring to claim 28, Konotchick discloses an operating system (figure 5B) powered by the signal.

Referring to claim 29, Konotchick discloses that the support structure (3) orients the magnets (41,42) for movement in a primarily horizontal direction.

Referring to claim 34, Konotchick discloses that the magnets (41,42) have multiple oscillation modes relative to the support structure (3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-23, 30-33, and 35-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konotchick (U. S. Pat. 5,347,186) in view of Raj (U. S. Pat. 5,452,520).

Konotchick discloses a dynamic magnet systems comprising:

a support structure (3) and a plurality of magnets (41,42) oriented in polar opposition to move relative to the support structure (3), in which

the system has a critical angle of displacement for the magnets (41,42) from a horizontal static position.

Konotchick discloses an energy harvester, comprising:

a support structure (3),

a plurality of magnets (41,42) oriented in polar opposition to oscillate relative to the support structure (3) in multiple oscillation modes, and

a conductor (45-46,48-49) oriented with respect to the support structure (3) and magnets (41,42) so that oscillation of the magnets (41,42) in response to a movement of the support structure (3) induces an electrical signal in the conductor (3).

Konotchick discloses an energy harvesters comprising:

a support structure (3),

a plurality of magnets (41,42) within the enclosure (3) oriented in polar opposition to oscillate relative to the support structure (3) in multiple oscillation modes, and

a conductor (45-46,48-49) oriented with respect to the support structure (3) and magnets (41,42) so that oscillation of the magnets (41,42) in response to a movement of the support structure (3) induces an electrical signal in the conductor (45-46,48-49), in which

the energy harvester has a critical angle of displacement for the magnets (41,42) from a horizontal static position.

However, Konotchick does not disclose ferrofluid bearings between the magnets and the support structure to provide low friction interfaces. Konotchick does not disclose that the ferrofluid bearings establishing static coefficients of friction between the magnets and the support structure less than about 0.02. Konotchick does not disclose that the ferrofluid having a viscosity less than 10 centipoise. Konotchick does not disclose that the ferrofluid comprising a light mineral oil medium mixed with isoparaffinic acid. Konotchick does not disclose that the critical angle of displacement for the magnets from a horizontal static position is less than 1 degree. Konotchick does not disclose that the critical angle of displacement for the magnets from a horizontal static position is less than 10 minutes.

Raj discloses ferrofluid bearings (30a,30b) between the magnets (27) and the support structure (25) to provide low friction interfaces. Raj's invention has the purpose of eliminating the effects of the friction to the movement of the magnets.

It would have been obvious at the time the invention was made to modify the magnet system of Konotchick and provide it with the bearing configuration disclosed by Raj for the purpose of eliminating the effects of the friction to the movement of the magnets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish static coefficients of friction between the magnets and the support structure less than about 0.02, a ferrofluid viscosity of less than 10 centipoise, and a critical angle of displacement for the magnets from a horizontal static position of less than 1 degree or less than 10 minutes since it has been held that where

the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select light mineral oil medium mixed with isoparaffinic acid as the ferrofluid since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the machine of Raj as a generator since the examiner takes Official Notice of the reversibility of a dynamoelectric machine to operate as a generator or as a motor in the dynamoelectric art would be within the level of ordinary skill in the art. (Electric Motors and Motor Controls; Jeff Keljik; 1995; Delmar Publishers; pages 139-142)

3. Claims 50, and 55-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konotchick (U. S. Pat. 5,347,186) in view of Roth et al. (U. S. Pat. 4,965,864).

Konotchick discloses substantially teaches the claimed invention except that it does not show that the support structure have a ring-shaped axis. Konotchick does not disclose that the critical angle of displacement for the magnets from a horizontal static position is less than 1 degree. Konotchick does not disclose that the critical angle of displacement for the magnets from a horizontal static position is less than 10 minutes.

Roth et al. disclose that the support structure (cylinder) have a ring-shaped axis (figure 6). The invention of Roth et al. has the purpose of improving the movement of fluid in the support by providing a continuous flow and a uniform direction.

It would have been obvious at the time the invention was made to modify the magnet system of Konotchick and provide it with the ring-shaped axis support disclosed by Roth et al. for the purpose of improving the movement of the magnets in the support by providing a continuous and uniform direction.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish static coefficients of friction between the magnets and the support structure less than about 0.02, a ferrofluid viscosity of less than 10 centipoise, and a critical angle of displacement for the magnets from a horizontal static position of less than 1 degree or less than 10 minutes since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the machine of Raj as a generator since the examiner takes Official Notice of the reversibility of a dynamoelectric machine to operate as a generator or as a motor in the dynamoelectric art would be within the level of ordinary skill in the art. (Electric Motors and Motor Controls; Jeff Keljik; 1995; Delmar Publishers; pages 139-142)

4. Claims 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konotchick (U. S. Pat. 5,347,186) in view of Roth et al. as applied to claims 50-52 above, and further in view of Raj.

Konotchick and Roth et al. substantially teaches the claimed invention except that it does not show that the respective bearings establish static coefficient of friction between the magnets and the support structure less than about 0.02. Neither Konotchick nor Roth et al. disclose that the bearings comprise a ferrofluid. Neither Konotchick nor Roth et al. disclose that the ferrofluid having a viscosity less than 10 centipoise. Neither Konotchick nor Roth et al. disclose that the ferrofluid comprising a light mineral oil medium mixed with isoparaffinic acid.

Raj discloses ferrofluid bearings (30a,30b) between the magnets (27) and the support structure (25) to provide low friction interfaces. Raj's invention has the purpose of eliminating the effects of the friction to the movement of the magnets.

It would have been obvious at the time the invention was made to modify the magnet system of Konotchick and provide it with the bearing configuration disclosed by Raj for the purpose of eliminating the effects of the friction to the movement of the magnets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to establish static coefficients of friction between the magnets and the support structure less than about 0.02, and a ferrofluid viscosity of less than 10 centipoise since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges

by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select light mineral oil medium mixed with isoparaffinic acid as the ferrofluid since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to the Notice of References Cited for other art applicable to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
Friday, May 23, 2003